

MOA/HEC-RAS Checklist CHANGE LOG:

03/05/12 - Item 8 was revised to clarify that contraction / expansion coefficients of 0.3 and 0.5, respectively, while valid for bridges, would not be valid for culverts (which, if considered an "abrupt transition" would be 0.6 and 0.8, respectively, per Table 3-3 in HEC-RAS Hydraulic Reference Manual.)

03/09/12 - Item 8 was revised again because, after guidance from recent HEC-RAS training, it is not necessarily appropriate to use 0.6 and 0.8 for the respective contraction / expansion coefficients for culverts in every situation - only applicable if structure width is very small relative to the floodplain width. Therefore previous guidance to use typical values of 0.3 and 0.5 was correct, and any deviation should be justified in the MOA model narrative.

05/07/12 - Item 11 was modified based on discussion with FMP Staff and their review contractors at a coordination meeting with NCDOT Hydraulics Staff on 5/03/12. The modifications provide clarification regarding inclusion of information in the in the RAS model narrative to address common recurring comments from MOA reviewers.

08/07/12 - Item 19 wording was revised for clarification regarding acceptable HEC-RAS model version(s) to use for MOA submittals.

04/22/13 - Item 6 changed to reflect FMP guidance to use 0.98 for maximum weir submergence factor. Items 10, 16, and 18 were updated to be consistent with recent modifications to MOA.

05/13/13 - Item 23 added to clarify meaning of "six section analysis" for MOA Type 2c.

08/07/13 - Item 22 revised for clarification. Item 24 added specifying that interpolated cross sections are not allowed and how new cross sections are to be added.

10/07/14 - Item 10 revised for clarification regarding effective models which do not use Method 1 encroachment for floodway. Guidance added to change to Method 1 and copy exact encroachment stations from effective model output into Duplicate Effective model. Item 19 updated link to USACE HEC-RAS version downloads web page.

02/11/15 - Item 19 hyperlinks updated.

04/21/15 - Renamed Document to "MOA/HEC-RAS Checklist". The issues are rearranged to better follow the modeling process and group similar issues together. Individual checkboxes were added to the sub items under the Structure Data Issue. Diagrams showing encroachment and ineffective flow placement were added. The following was added to the Ineffective areas issue "The general accepted contraction ratio is 1:1 and expansion ratio generally ranges from 1:1 to 1:4. Also, when revising ineffective flow elevations be consistent and make sure that the ineffective flow areas act together on the upstream and downstream cross sections of a structure (sections 2 and 3)." The following was added to the New Cross Section

issue "The cut line length in the geometric data needs to match the cross section length." Added new Item 25 - "The reported upstream and downstream limits should extend just beyond the range of published FEMA FIS cross sections for which there is a water surface elevation difference between the corrected and revised plans (i.e. the affected reach)."

06/22/15 - Fixed links in issue 2. The following sentences were added to issue 22 "Only the BFE natural profile will be reviewed. No floodway profile is required."

05/25/16

- Item 1. HEC-RAS Model Version: was rewritten to better define how to handle different versions of HEC-RAS
- Items 3 to 25 were renumbered 4 to 26.
- (new) Item 3. Area of Influence and Upstream and Downstream Limits: defined.
- Item 4. Boundary Conditions: was rewritten to better reflect FEMA policies
- Item 11. Corrected Effective Model: was rewritten to better define the purpose of the corrected effective model
- Item 14. Contraction and Expansion Coefficients: added additional guidance
- Item 19. Rises: was rewritten to address recurring review comments
- Item 22. HEC-2: was rewritten to better reflect FEMA policies
- (new)Item 26. No Impacts to Structures: defines FEMA's policy